services at the RT location, and a second set and its associated electronic equipment is allocated to the Asynchronous Transfer Mode ("ATM") broadband services at the RT location. The type of equipment used by the ILEC determines the total amount of bandwidth available. As with any shared resource, multiple users of that resource all compete for the available bandwidth. If one user is permitted to take more than its proportional share, the other users suffer. And, if CLECs are entitled to CBR and VBR, other users of the shared facilities will suffer.

Specifically, the NGDLC architecture used to transport DSL service uses ATM statistical multiplexing on the fiber feeder. When the Unspecified Bit Rate ("UBR") QoS is used, access to the shared resource's available bandwidth is not dedicated in specific amounts of bandwidth to any user. ATM statistical multiplexing places traffic from all users onto the shared resource in a nondiscriminatory manner (*i.e.*, no user has its service degraded more than any other). If the total requests for access to that shared resource exceed its capacity, user traffic will be buffered. Traffic buffering means additional delay is introduced into the user's traffic. If the buffer overflows, user traffic will be dropped in a nondiscriminatory manner.

The VBR QoS and CBR QoS depend on an admission control algorithm to guarantee a fixed amount of bandwidth and a particular level of service to a particular carrier or end user. When a VBR or CBR connection is established, the admission control algorithm determines if the shared resource can guarantee the specified level of service. If it can, the connection is established. If not, the connection is refused. This admission control is done on a circuit-by-circuit basis. Once a circuit has been established, however, the service of that end user will not be degraded below its guaranteed level of service.

Because CBR and VBR guarantee a level of service, users with traffic of these classes always take precedence over users with UBR service. Put another way, UBR users have access only to that portion of the bandwidth that has not been guaranteed to CBR or VBR traffic. This means that buffering and dropping of the cells of UBR traffic will occur sooner, and under less demanding circumstances, if some users of the shared resource have CBR or VBR traffic, than if all the users were UBR. Therefore, end users using services with a UBR service level will experience service degradation because the amount of available bandwidth has been decreased by the amount consumed by CBR- or VBR-based services. This is true even if CBR and VBR users are producing traffic at the same rate as UBR users. Because admission control guarantees the full requested access to the shared resource at all times for CBR and VBR users, the actual traffic generated by these users does not matter; only the requested guarantee rate matters. In other words, a guaranteed user (*e.g.*, CBR and VBR) transmitting no traffic uses the same resources as if generating traffic at its full, guaranteed rate. Thus, allowing CBR and VBR users will degrade service for UBR users because of the dedicated bandwidth that cannot be used by the UBR users.

The question, then, is how to prevent this service degradation from occurring. Service degradation for users of a shared resource can be limited in a number of ways. When only UBR traffic is present, service degradation can be limited by having the network owner perform capacity monitoring of the shared resource. Indeed, since UBR traffic has no admission control, the network owner must perform this function. If resource utilization gets too high, traffic delay and traffic loss will occur. Before this reaches unacceptable levels, the network owner could augment the capacity of the network or restrict access to the network from new users.

When UBR and a guaranteed QoS (CBR or VBR) are provided over the same shared resource, service degradation is much more difficult to control. It is important to emphasize that, in this case, preventing service degradation refers to the degradation of UBR services, because, as mentioned above, CBR and VBR services are not degraded once they are established. The simplest way of limiting UBR service degradation would be to provide separate facilities for UBR and guaranteed services. UBR service would then have complete access to its facility, and limiting service degradation would be accomplished through the monitoring of resource utilization as described above.

It is not always possible, however, to separate the facilities. For example, the SBC ILECs' NGDLC equipment does not allow the separation of UBR from CBR or VBR traffic onto separate facilities. And, without separate facilities, the network owner must restrict the use of the shared resource by the guaranteed services in order to limit the service degradation to UBR users. Without this control, each additional CBR or VBR service established on the network *will* affect the service of all UBR users. As the number of CBR and VBR users grows, the degradation will become worse. This effect is manifested in traffic delay and traffic loss, which is unacceptable to the end users. Because there is a finite amount of bandwidth, as CBR and VBR QoS grows, the number of customers that can be served decreases. Thus, it is imperative that the network owner be able to administer service availability, rates, and the number of users in a nondiscriminatory manner to prevent this degradation to UBR users (today, generally residential customers) by CBR and VBR users (today, generally business customers).

Control by the network owner is necessary not only to prevent service degradation, but also to prevent the exhaustion of the effective capacity of the NGDLC by CBR or VBR users. Even if only a small percentage of circuits are given a CBR or VBR QoS, the NGDLC shared resources would exhaust prematurely and could require the placement of additional equipment sooner than planned. That is, the capacity of the NGDLC could become bandwidth limited before it becomes port (*i.e.*, physical capacity) limited. This could effectively limit the number of carriers that can provide service to end user customers from the NGDLC. For example, with UBR QoS, the NGDLC can provide DSL service to 672 end users. However, if CBR is provided at a 1.5 MB guaranteed rate, the NGDLC can provide service to only approximately 100 end users. That represents a loss of 85% of the physical DSL capacity of the NGDLC. In turn, fewer mass-market customers would reap the benefits of advanced services – in direct contradiction to section 706. Thus, while a few CLECs might benefit from access to CBR and VBR, it would come at the expense of the general public and other CLECs. Thus, such a policy would be at odds with the goals of the 1996 Act to benefit "American telecommunications consumers," not individual competitors, and to "encourage the rapid deployment of new telecommunications technologies." Pub. L. No. 104-104, Preamble, 110 Stat. 56.[46]

If the Commission nonetheless were to ignore the 1996 Act's mandates under section 251(d)(2) and 706 and allow CLECs access to CBR and VBR, at the very least it would have to allow service levels to be cost-based priced according to their resource usage. As described above, UBR is a non-guaranteed class of service. Service levels should be priced by allocating costs across the expected customer utilization of a particular QoS. Because CBR and VBR are guaranteed classes of service, they must be priced according to the service level guaranteed, independent of actual traffic generated. Users with a non-guaranteed QoS should be allocated a proportion of the common costs according to the expected customer utilization.

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[46] *See also Iowa Utils. Bd.*, 525 U.S. at 430 (Breyer, J., concurring in relevant part and dissenting in part) ("Regulatory rules that go too far, expanding the definition of what must be shared beyond that which is essential to that which merely proves advantageous to a single competitor, risk costs that, in terms of the Act's objectives, may make the game not worth the candle.").

d. Subloop Capacity Limitations

The Commission requests comment on how a competitor can obtain access to the fiber subloop between the central office and the RT when there is insufficient capacity. *NPRM* ¶ 126. The short answer is that carriers cannot obtain access when the capacity of the fiber is exhausted and there is no other source of fiber, such as dark fiber. Under the Eighth Circuit's decision in *Iowa Utilities Board*, it is clear that the competing carrier must take the incumbent's network as it finds it. If there is inadequate capacity to meet requests for UNEs, the incumbent cannot be required to build additional capacity or otherwise alter its network to accommodate the CLEC. The CLEC is entitled "only to an incumbent LEC's *existing* network – not to a yet unbuilt superior one." *Iowa Utils. Bd.*, 120 F.3d at 813. Thus, the incumbent cannot be required to increase capacity or otherwise alter its network for the CLEC's benefit.

As to whether a carrier can install equipment at the RT to increase capacity, *NPRM* ¶ 126, that would depend on whether such equipment meets the 1996 Act's collocation requirements and whether it would cause network security and reliability concerns. For example, if the equipment sought to be collocated is multi-functional and is not necessary for access to UNEs or for interconnection, it cannot be collocated. Moreover, if the fiber at the RT is exhausted, carriers are limited in their ability to increase fiber capacity. Power and space at these sites do not allow the placement of DWDM equipment to increase the capacity of the existing fibers. The DWDM occupies more than seven square feet of space, at a minimum, and requires a controlled environment for heat, humidity, dust control, and fiber cabling, which is not available in the majority of RTs. That said, carriers are permitted to install equipment in the RT that is necessary for access to UNEs and interconnection, as long as there is space in the terminal.

e. Operations Support Systems ("OSS")

The Commission asks commenters to address what modifications, if any, are necessary to an ILEC's OSS to ensure nondiscriminatory access to loops and subloops under section 251(c)(3). *NPRM* ¶ 128. There is no reason to modify the existing OSS because the change management process already accommodates the operational issues associated with new technology, including NGDLC technology. Whether a loop or subloop is purchased for voice or data, the loop continues to be identified by its network channel ("NC") and network channel interface ("NCI") code. When a new subloop is ordered by a CLEC, the CLEC may then ask for a new set of parameters for the NC/NCI code. The change management process remains an available tool to the CLEC for both voice and data, regardless of the issues surrounding the new technology being deployed. In fact, the change management process is designed specifically to address the changes associated with new products and technology being deployed by CLECs purchasing subloops.

For example, the SBC ILECs have made the necessary enhancements to its ordering process to reflect its deployment of NGDLC by simply adding new NC codes, NCI codes, and new field identifiers ("FIDs"). CLECs are informed of upcoming changes to the ordering process at monthly/quarterly change management process meetings and in accessible letters.

The Commission also seeks comment on how deployment of fiber facilities and NGDLC systems affects carriers' abilities to test and monitor loop and subloop facilities. *See id.* The deployment of NGDLC has no affect on a carrier's ability to engage in testing and monitoring. Carriers are able to test and monitor an SBC ILEC's loop and subloop facilities using a mechanized loop test ("MLT") system. MLT allows carriers to test loops and subloops in the NGDLC environment, just as they test them in the copper environment. Carriers have access to this system over Toolbar, and, once they obtain access, they can engage in remote testing. Moreover, carriers are not charged for the ability to use this testing mechanism.

B. Spare Copper

The Commission asks ILECs to describe the process by which they determine whether to retire unused facilities. *Id.* ¶ 130. With respect to overlay networks, when end users are moved to fiber facilities-based platforms from the existing copper network, the copper pairs become spare. The SBC ILECs would maintain the copper cables they seek to utilize. The SBC ILECs' decommissioning policy was recently considered – and approved – in the Commission's *Modification Order.* The SBC ILECs will consider the following factors in determining whether to retire a mainframe terminated copper facility between the central office and the end user's premises:

(1) whether the cost to maintain the copper facility for an acceptable level of service is greater than the cost to replace it with fiber and associated electronics;

(2) whether public requirements force facility relocation;

(3) whether all ducts and manholes are blocked and more network capacity is required on a given route;

(4) whether a copper feeder cable is underutilized and the cost to maintain the copper is greater than fiber and associated electronics replacement cost; or

(5) Acts of God or catastrophic failure.

Id. App. A. And, of course, the SBC ILECs apply these factors in a nondiscriminatory fashion.

The Commission asks whether there should be a state or federal approval process before an ILEC is permitted to retire and remove loop plant. *NPRM* ¶ 131. Such a requirement would be unlawful, contrary to Commission precedent, and antithetical to competition. Incumbent

LECs – just as much as CLECs – have the right to design their own services and manage their networks to support those services. The Commission and the courts have repeatedly rejected proposals that would require incumbents to support obsolete networks specifically for the benefit of their competitors.

A bedrock principle of the American economic system is that a group of competitors may not agree among themselves what services they (or their competitors) will or will not offer to consumers. The antitrust laws secure this principle.[47] Requiring ILECs to seek regulatory approval – and therefore subject themselves to comment by their competitors – before retiring loop facilities would violate this tenet.

The 1996 Act recognizes that incumbents must be permitted to control their networks. The 1996 Act balanced its market-opening measures against incumbent LECs' rights to compete and to earn a fair return. Most importantly, Congress established that, while incumbent LECs must provide CLECs interconnection, unbundling, and resale access to an incumbent's network, that obligation applies only to the incumbent's existing facilities and retail services. There is no obligation to provide interconnection that is better than the incumbent LEC has chosen for its own operations; to offer unbundled access "to a yet unbuilt superior [network]" of CLECs' choosing; or to provide wholesale services that are not also provided at retail. *See Iowa Utils. Bd.*, 120 F.3d at 812-13 (striking down "superior quality rules"); 47 U.S.C. § 251(c)(4)(A). Thus, an ILEC does not need to maintain copper facilities solely for a CLEC's benefit.

[47] *See, e.g., FTC v. Indiana Fed'n of Dentists*, 476 U.S. 447, 459 (1986) ("[a] refusal to compete with respect to . . . services offered to customers, no less than a refusal to compete with respect to the price term of an agreement, impairs the ability of the market to advance social welfare"); *United States v. American Radiator & Standard Sanitary Corp.*, 433 F.2d 174, 186-88, 207 (3d Cir. 1970) (upholding criminal convictions for agreement to stop production of lower-priced plumbing fixtures), *cert. denied*, 401 U.S. 948 (1971).

Accordingly, there is no need for a state or federal approval process to oversee the ILEC's decision.

The Commission itself has recognized as much. In its *Line Sharing Order*, the Commission concluded that incumbent LECs' obligations toward CLECs do not include refraining from upgrading their plant to new fiber-based systems. An incumbent LEC may construct new facilities or decommission existing ones, or migrate its customers from copper to fiber loops in the course of normal maintenance or network improvement. 14 FCC Rcd at 20951, ¶ 80. CLECs may be required to find new unbundled facilities as a result, "or find another alternative to maintain service." *Id.* There is no rational basis upon which the Commission could reach a different conclusion here.

C. Cross-Connection

The Commission seeks comment on the technically feasible points for accessing the copper distribution portion of the loop and the fiber feeder portion of the loop at RT locations. *NPRM* ¶ 133. Specifically, the Commission asks whether cables containing copper pairs are typically hardwired into RT equipment and whether such an arrangement is necessary. *Id.*

Hardwire arrangements are necessary at RTs because of space limitations and the potential for service disruption. Under the basic hardware arrangement, the copper wiring harness from the backplane[48] of the channel bank assembly in the RT is spliced to the copper cable, which serves the various SAIs within the serving geographic area. This splice takes place within the limited space of the physical cabinet, referred to as the splice chamber. From the splice chamber, one large copper cable is routed to a buried splice where smaller copper cables are then connected to provide service to each SAI served by the NGDLC RT. In many cases, this continuous copper path is spliced using high-capacity copper splicing modules. These

[48] This is the backside of the equipment where the wire is soldered to the equipment.

procedures and products have reduced the size of the RT cabinet, splice closures, and SAI cabinets.

This method of construction reduces the number of access points, which in turn decreases the potential for costly service interruptions and lowers provisioning and maintenance costs. Limiting access to copper cable is an industry-proven method of reducing the cost to maintain the copper distribution cables and providing increased reliability to the subscriber. This method also reduces the number of cross-connects required to provision service, which results in better customer service. It is, therefore, the only method that both maximizes service quality and minimizes the amount of space required for access.

The Commission also asks whether it should require ILECs to modify their facilities to allow carriers to interconnect and access the subloop at the RT and whether, with respect to build-outs, it should require ILECs to ensure that there are technically feasible access points at the RT. *Id.* ¶ 133. As to the former question, the Commission cannot require ILECs to modify their existing network to allow carriers access to the subloop. The Eighth Circuit has made clear that CLECs are entitled access "only to an incumbent LEC's *existing* network – not to a yet unbuilt superior one." *Iowa Utils. Bd.*, 120 F.3d at 813; *see also Iowa Utils. Bd.*, 219 F.3d at 757. Thus, the ILECs cannot be required to modify their facilities, even if they will be "compensated for the additional cost." *Iowa Utils. Bd.*, 120 F.3d at 813.

Similarly, requiring an ILEC to place additional access points on all new build-outs would require the ILEC to build its network to CLECs' specifications, not its own. This is at odds with the Eighth Circuit's decision, which makes clear that CLECs have access to an incumbent's existing network, not authority over its future design. Such a requirement would also conflict with this Commission's prior determinations. The Commission had made clear that "[t]he role of the Commission is not to pick winners or losers, or select the 'best' technology to meet consumer demand, but rather to ensure that the marketplace is conducive to investment, innovation, and meeting the needs of consumers." *Advanced Services Order*, 13 FCC Rcd at 24014, ¶¶ 2, 3 & n.6. Dictating how ILECs design their network build-outs cannot be squared with this policy. Network architecture decisions should be made in response to market forces, not regulatory fiat. Indeed, to endorse the latter is to induce delays in the deployment of broadband and other advanced services to consumers.

An incumbent deciding whether to build-out its facilities would face a far different calculus if it were forced to include additional access points on those build-outs. Because of the uncertainty associated with forecasting CLEC demand, ILECs would have to install 100% cross-connect capability at all RT locations. This will cost tens of thousands of dollars per RT. Multiplied by the tens of thousands of RTs affected, the result is staggering. An ILEC may have to spend hundreds of millions of dollars in capital costs alone – with no assurance that a facility would ever be used by any CLEC. An access point requirement for build-outs would also substantially increase labor costs. When a service order is issued, a technician must be dispatched to place a new cross-connect both at the RT location in the access point and at the SAI to establish the transmit path.

A build-out requirement would also require modification of the incumbent's OSS to allow for the identification of the additional component and to assign the appropriate copper facility. The addition of another access point would also impact maintenance and trouble isolation by increasing clearing time and maintenance costs. An access point requirement on build-outs would, therefore, inevitably curb ILECs' incentives to invest in such build-outs.

This harms consumers of advanced services as well as the incumbents' investors. Indeed, such a requirement runs completely counter to the price cap regime, under which "investors rather than ratepayers have borne the risk of loss on [LEC] assets." *Illinois Pub. Telecomms. Ass'n v. FCC*, 117 F.3d 555, 570 (D.C. Cir. 1997), *cert. denied*, 523 U.S. 1046 (1998). If an ILEC makes a bad investment decision, "company and shareholder profits decline[]." *Id.* Just as the Commission cannot appropriate any increase in value from an ILEC's investment decision, it cannot force an ILEC to make a bad investment decision solely for the benefit of its competitors.

CONCLUSION

For the foregoing reasons, the Commission should decline to impose new collocation and unbundling requirements.

Respectfully submitted,

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CERTIFICATE OF SERIVCE

I, Lacretia Hill, do hereby certify that on this 12th day of October, 2000, a copy of the foregoing "Comments" was served by hand delivery to the parties below.

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